

Eelectronic Supplimentary Information (ESI)

Evaporative Lithography in Open Microfluidic Channel Networks

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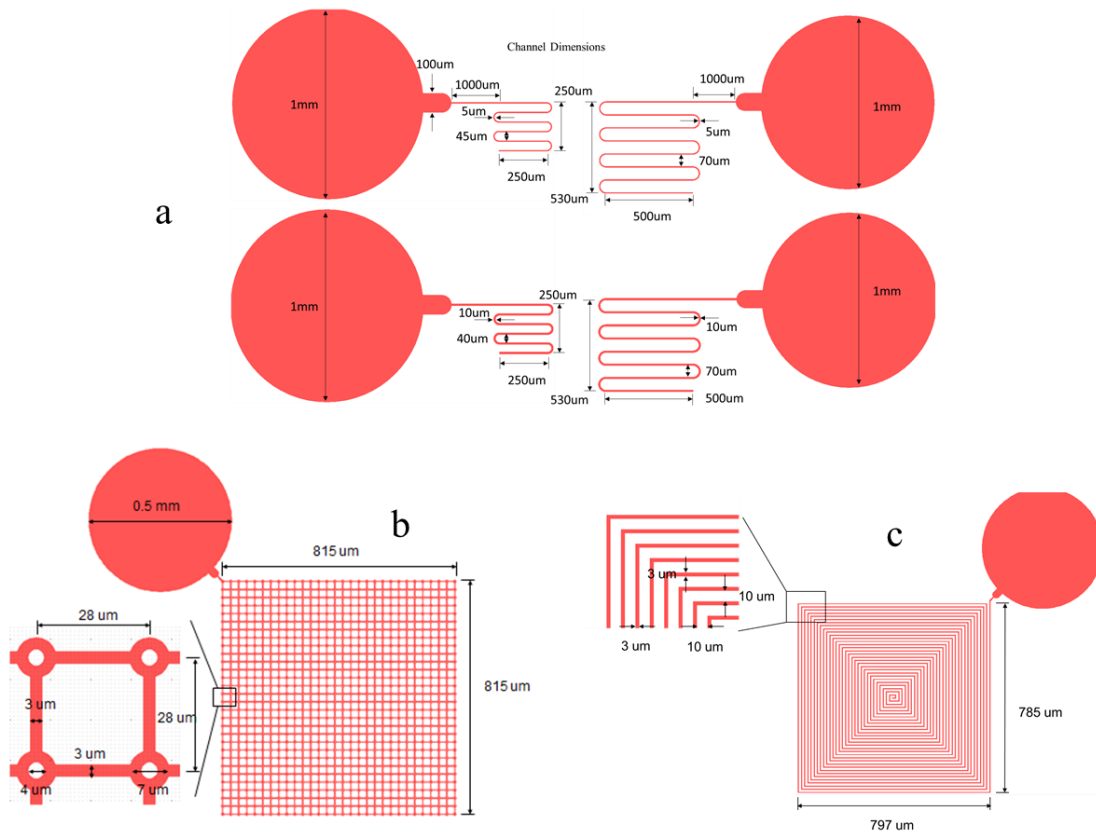
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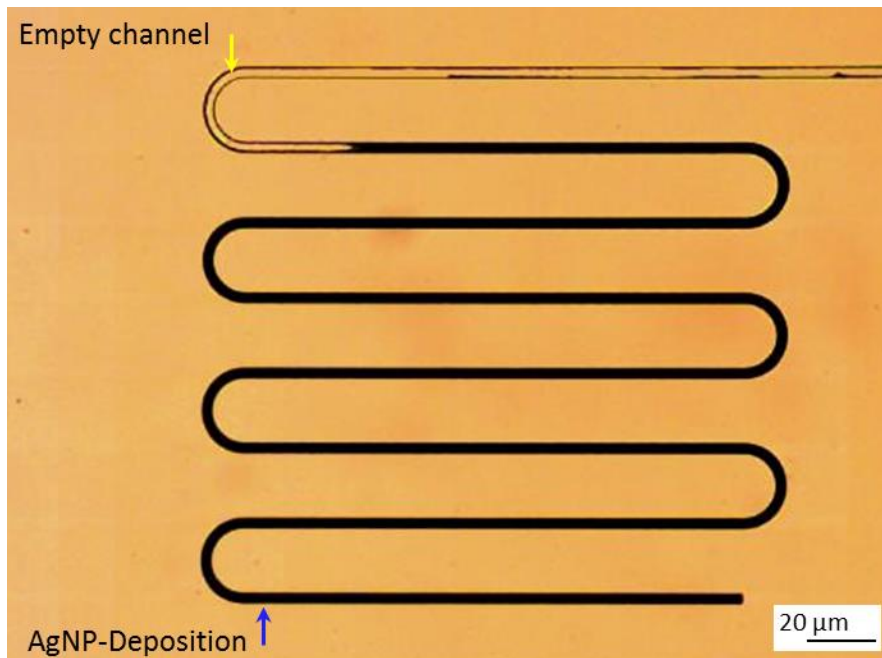
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ESI-1



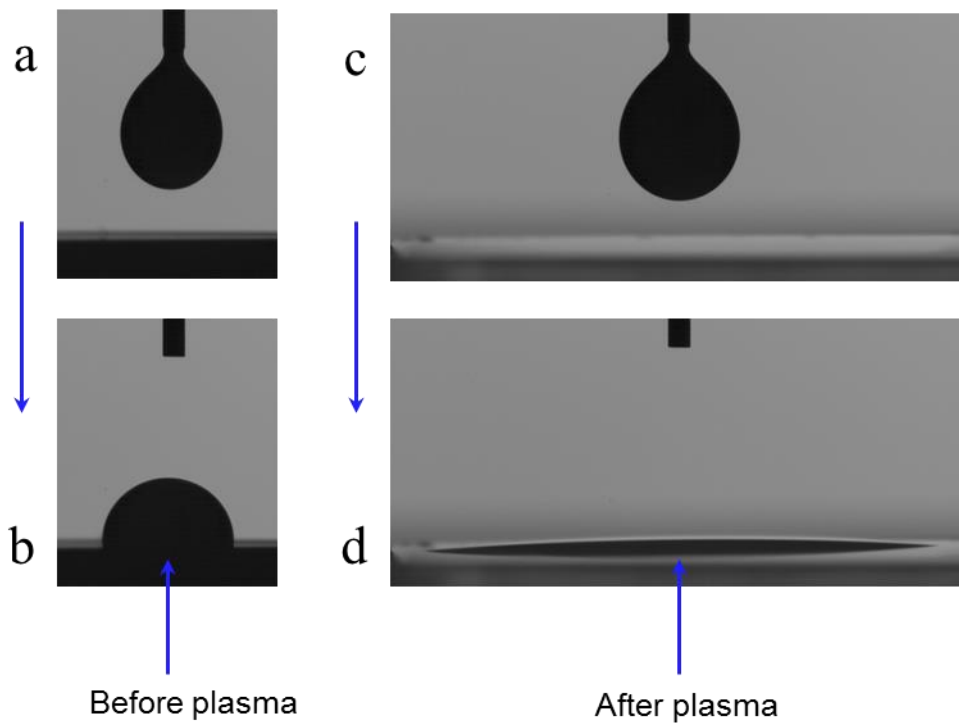
S1 (a) Grooved PDMS-channels (b) regular grid-based channel network and (c) long square channel microchannel used to demonstrate capillary driven spreading, evaporation and depositions.

ESI-2



S2 Optical images of grooved microchannel, showing the effect of not having enough suspension in the loading reservoir, which connects to the channel at the upper right side. Yellow arrow shows the empty, while a blue arrow denotes the filled channel sections under insufficient supply of AgNP-ink (particle size ≤ 50 nm and concentration 30-35 wt% in triethylene glycol monomethyl ether) in the loading reservoir. The image was capture at 2000 fps.

ESI-3



S3 Contact angle study of aqueous-suspension on hydrophobic and hydrophilic PDMS surfaces. (a) Pendent aqueous suspension-droplet before hitting the hydrophobic PDMS surface, (b) side view of aqueous suspension-droplet on a PDMS-substrate prior to plasma exposure (30s), (c) pendent aqueous suspension-droplet before hitting the hydrophilic PDMS surface and (d) side view of aqueous suspension-droplet on a hydrophilic PDMS-substrate after plasma exposure. The suspension used in this study consists of D.I. water with 1wt. % homogeneously dispersed latex microspheres. All the images were captured by a high-speed camera at 2000fps.

Video File

Video File-1 Capillary-driven spreading and evaporation-induced particle deposition over entire channel-length.

Video File-2 Spreading dynamics investigation in a meandering microchannel with a total length of 5.7 mm

Video File-3 High magnification of evaporation induced deposition in a channel area of 400 μm in length.

Video File-4 Spreading of AuNP suspension through a channel network.

Video File-5 Evaporation induced AuNP-based metal grid formation.